

Abstract of the Invention

A system for monitoring and controlling the deposition of thin films employed in semiconductor fabrication is provided. The system includes one or more acoustic and/or ultrasonic wave sources, each source directing waves onto one or more thin films deposited on a wafer. Waves reflected from the thin film is collected by a monitoring system, which processes the collected waves. Waves passing through the thin film may similarly be collected by the monitoring system, which processes the collected waves. The collected waves are indicative of the presence of impurities and/or defects in the deposited thin film. The monitoring system analyzes and provides the collected wave data to a processor, which determines whether adjustments to thin film deposition parameters are needed. The system also includes a plurality of thin film deposition devices associated with depositing thin films on the wafer. The processor selectively controls thin film deposition parameters and devices to facilitate regulating deposition.